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10/583,344	08/04/2006	Mohamed Takhim	66345-041-7	3133
25769 7590 05/13/2009 DYKEMA GOSSETT PLLC FRANKLIN SQUARE, THIRD FLOOR WEST 1300 I STREET, NW WASHINGTON, DC 20005				
EXAMINER QIAN, YUN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/583,344

Applicant(s)

TAKHIM, MOHAMED

Examiner

YUN QIAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

Claims 2-15 remain for examination. Claims 2-11 and 13-15 have been amended to be depended on the new claim 15. Claim 12 has been amended to be depended on the claim 11.

Claim 15 is a new claim. Claim 1 is canceled.

Previous Grounds of Rejection

Regarding Abstract, the objection stands because it contradicts with the claims 1 and 9.

Regarding claims 1-5, the rejection under 35 U.S.C.102 (b) and (e) as being anticipated by Hauge et al. (US 3,919,395) stands as generally set in the final office action mailed on October 16, 2008.

Regarding claims 6-14, the rejection under 35 U.S.C. 103(a) as being unpatentable over Hauge et al. (US 63,919,395) further in view of Loewy et al (US 3,988,420) stands as generally set forth in the final office action mailed on October 16, 2008.

New Grounds of Rejection

Objection

Regarding the new amended Abstract, the phrase "...by **at least** 10% in weight of a hydrochloric aqueous acid solution..." contradicts with the claims 9 and 15 with the phrases "around **3 to 8%** by weight" and "a HCl concentration of **less than 10%** by weight..." respectively. Appropriate correction is required.

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Claim Objection

Regarding claim 15(a), the phrase "...hydrochloric acid having an HCl..." should be read as "...HCl". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

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35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-5, 7, 9-11 and 14-15 are rejected under 35 U.S.C.103 (a) as being unpatentable over Hauge et al. (US 3,919,395).

Regarding claim 15, Hauge et al. discloses a method for recovering phosphorus compounds from both low and **high grade** phosphate ores comprising steps of:

(a) Agitating with a 2.3N hydrochloric acid solution (about 7% wt, col.3, line 33) at ambient temperature, at which stage a phosphate is digested into the solution, and the insoluble materials (containing impurities) are then separated via a filtration (col.3, lines 52-59, claim 1).

(b) Controlling the pH with two stages of pH adjustment. Initially the pH is raised to about 1-2 with lime or ammonia, at which stage the most soluble impurities in the filtrate are precipitated and some calcium phosphates are also precipitated. At higher pH levels, greater efficiency of impurity precipitation is achieved (col3, lines 58-67).

(c) Addition of lime or ammonia to raise pH to about 3-5. Under these conditions calcium phosphate are recovered in acceptable purity (col. 3, line 67- col.4, line 4).

The apparent difference between the applicant's claim 15 and the teaching from the reference is the time for introduction of a base, whether it is added before or after a separation of initially precipitated insolubles. However, the change in sequence of neutralization and filtration would have been obvious

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to one of ordinary skill in the art absent evidence to the contrary. The following is a quotation of MPEP 2144.04 which forms the basis for the rejection: "In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results); In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is *prima facie* obvious.)".

Regarding claims 2-5 as discussed above, the process conditions (pH, and temperature) taught by Hauge et al. is the same as per applicant claims 2-5.

Regarding claims 7 and 10-11, Hauge et al. discloses a method of generating hydrochloric acid by treating the resulting aqueous CaCl_2 solution with about stoichiometric quantity of sulfuric acid. The precipitated gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is recovered by filtration and the filtrate (hydrochloric acid solution) is sent to a storage tank for reuse (col. 6, lines 67 to col. 7, lines 1-7, col.8, lines 12-15, and claims 14-18).

Regarding claim 9 as discussed above, the concentration of diluted hydrochloric acid taught by Hauge et al. is 2.3 N-5 N (about 7-15% wt). The references differ from Applicant's recitation of claim 9 (<10% wt) by not disclosing identical ranges. However, the reference discloses "overlapping" ranges, and overlapping ranges have been held to establish *prima facie* obviousness (MPEP 2144.05).

Regarding claim 14, the process taught by Hauge performs either in batch fashion or continuously (col. 2, lines 57-59). A flow chart of the preferred process

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and a sectional view of the crystallizer used in the process equipped with a stirrer are shown in FIG. 2 and FIG. 3 (col.3, lines 33-35).

Claim 6 is rejected under 35 U.S.C.103 (a) as being unpatentable over the references as combined above (Hauge et al. and Loewy et al), further in view of Dickey et.al. (<http://jove.geol.niu.edu/faculty/dickey/hcl.html>).

Regarding claim 6, it is well established in the field of chemistry to dilute a concentrated HCl with water to obtain a desired concentration of HCl solution (an example is given by N. Dickey for making an aqueous 10% HCl solution from a 37% HCl)

Claim 8 is rejected under 35 U.S.C.103 (a) as being unpatentable over Hauge et al. (US 63,919,395) as discussed above, further in view of Loewy et al (US 3,988,420).

As discussed above, although the process taught by Hauge is designed to recover phosphorus compounds from both low and **high grade** phosphate rock (Abstract, and col. 3, line 43-44), he does not specifically disclose an example of using the phosphate ore having 25-35% P_2O_5 .

Loewy '420 teaches a combined process for the manufacture of feed grade dicalcium phosphate and pure phosphoric acid, starting with phosphate rock containing 25% P_2O_5 as the recited claim 8 (Col. 6, Example 1).

It would have been obvious to one of ordinary skill in the art at the time invention was made to combine the method of Loewy with the process taught by

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Hauge, motivated by the fact that it reduces costs (i.e. chemical reagents, time etc) to produce an acceptable quantity and quality of product. Because both teach well known methods of recovering phosphate from phosphate ore, it would have a reasonable expectation of success. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 12-13 are rejected under 35 U.S.C.103 (a) as being unpatentable over the references as combined (Hauge et al. and Loewy et al), further in view of Watanabe et al (US 4,113,588).

Regarding claims 12-13, although neither Hauge nor Loewy et al does not specifically teaches a process for purification and recovering HCl as per applicant claim 12-13 , Watanabe et al. teaches a process for recovery of waste HCl and H₂SO₄ involving a base treatment (abstract and col.10, line 36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hauge et al and Watanabe et al. to obtain the invention as specified in the claims 11-13, motivated by the fact that the process taught by Watanabe et al. for recover of HCl and H₂SO₄ from the Fe ion enriched waste produces a high-purity iron or iron hydroxide (abstract). Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments

With regards to the previous Grounds of Rejection

Applicants argue that Hauge et al. does not specifically disclose using <10% HCl for digesting the ore (containing >20% P₂O₅). In further, Hauge et al. does not specifically disclose to neutralize the digested solution prior 1st separation.

This is not persuasive because Hauge et al disclose an extraction process for the recovery of phosphorus compounds from both low and **high grade phosphate ores** (abstract) at a room temperature with about 2.3 N-5 N (about 7-15% wt) hydrochloric acid (col.3, line 33).

The change of the sequence of neutralization and filtration would have been obvious to one of ordinary skill in the art absent evidence to the contrary, see MPEP 2144.04. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

The objection with respect to the abstract stands.

Regarding claims 1-5, the rejection under 35 U.S.C. 102(b) and (e) as being anticipated by Hauge et al (US 3,919,395) stands.

Regarding claims 6-14, the rejection under 35 U.S.C. 103(a) as being unpatentable over Hauge et al (US 3,919,395) in view of Loewy et al (US 3,988,420) stands.

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New grounds rejection with respect to claim 6 under 35 U.S.C.103 (a) as being unpatentable over the references as combined above (Hauge et al. and Loewy et al), further in view of Dickey et.al. is discussed above.

New grounds rejection with respect to claims 2-5, 7, 9-11 and 14-15 under 35 U.S.C.103 (a) as being unpatentable over Hauge et al. (US 3,919,395) is discussed above.

New grounds rejection with respect to claim 8 under 35 U.S.C.103 (a) as being over Hauge et al (US 3,919,395) in view of Loewy et al (US 3,988,420) is discussed above.

New grounds rejection with respect to claims 12-13 under 35 U.S.C.103 (a) as being over Hauge et al and Loewy et al., further in view of Watanabe et al (US 4,113,588) is discussed above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

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action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUN QIAN whose telephone number is (571)270-5834. The examiner can normally be reached on Monday-Thursday, 10:00am -4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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